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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : B68C 1/02 — A2

(11) International Publication Number: WO 98/06662

(43) International Publication Date: 19 February 1998 (19.02.98)

(21) International Application Number: PCT/GB97/02192

(22) International Filing Date: 15 August 1997 (15.08.97)

(30) Priority Data:
9617174.9 15 August 1996 (15.08.96) GB

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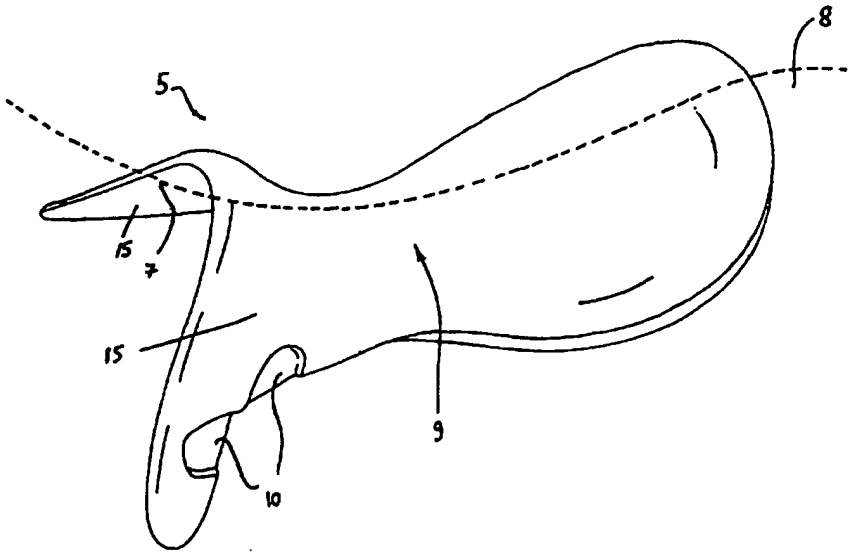
(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).

Published
Without international search report and to be republished upon receipt of that report.

(54) Title: RIDING SADDLE



(57) Abstract

The present invention relates to a saddle tree (5) for incorporation in a therapeutic saddle, the saddle tree comprising a substantially elongate and imperforate member configured to the shape of a horse's back, wherein the saddle tree extends substantially the entire longitudinal length of the saddle so that in use it presents a smooth and continuous surface towards the horse's back from the withers (7) to the hind quarters (8), and wherein the saddle tree is a one-piece integral plastics moulding.

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RIDING SADDLE

The present invention relates to saddles and in particular the effect they have on horses that wear them on a regular basis.

In this respect, the many different activities associated with horse riding, for example, flat racing, steeple chasing, routine exercising, and all associated thoroughbred pursuits, involve different designs of saddle. This is because the different activities can involve dissimilar riding positions and techniques.

However, a problem common to conventional exercise saddles is that with their prolonged usage, horses develop lumps, soreness and injury around their withers area, i.e. at the highest part of the back, behind the neck and between the shoulders. Such lumps and conditions develop because of the localised pressure points exhibited by existing saddle designs. As shown in Figure 1, existing exercise saddles include a saddle tree 1 formed into the underside of the saddle that sits generally in the area from the withers downwards, (please note the top of a horse's back is represented generally by a phantom line). The saddle tree has a pair of rigid arms 2 that extend only partly along the longitudinal extent of the saddle. On riding a horse wearing the saddle, the limited extension of the arms and their rigid nature relative to the rest of the saddle means that the saddle as a whole tends to bend at the free ends 3 of the arms with the rear part of the saddle unsupported. It is these areas that represent pressure points that lead to the development of lumps 5 and other associated health problems.

In this respect, if the horse requires treatment valuable training and competition time may be lost. Furthermore, the costs of employing veterinary surgeons in such matters can be substantial.

The bending of the saddle worsens with age as the inherent strength and resilient qualities of the unsupported saddle material deteriorate, so that at a certain point the saddle is no longer usable or usable only at a risk of causing injury or further injury to the horse, despite the majority of the saddle's components being in good order. The saddle's life is thus prematurely cut short, which is highly undesirable in view of the cost of replacement.

Moreover, as the saddle bends, the riding position of the rider deteriorates, whereby the rider cannot but help sit incorrectly on the horse. Consequently, the performance of the rider and the horse are not maximised.

GB-A-2 227 638 discloses a plastics saddle-tree formed according to the traditional requirements, i.e. where the saddle tree extends only a short distance along the length of the saddle and thus, in use, only a short distance along the horse's back. Such a saddle will suffer from the various problems discussed above.

GB-A-1 245 445 discloses a saddle tree formed of polyurethane as a main constituent of the tree. The use of polyurethane raises significant problems in that in it is not sufficiently strong in itself to accommodate the strenuous usage demanded of such trees. As a result, a front iron is required in the tree as well as other reinforcing means disposed along the longitudinal extent of the tree. Such reinforcing means within the polyurethane reduce the overall flexibility of the tree and in so doing themselves create pressure points, which in turn diminish the ability of the tree to avoid damage to the horse's back as explained above. The provision of reinforcing elements within the tree also lead to additional manufacturing processes, thereby increasing associated costs.

GB-A-1 439 761 similarly discloses a saddle tree formed of polyurethane foam material, in this case fabricated in two

stages using two different grades of foam. As above, the urethane material is an unsuitable material on its own, as illustrated by the need of a reinforcing front iron. Also this document contemplates introducing specific points of flexure, e.g a hinged arrangement to avoid breakage of the saddle tree in the event that a horse wearing the same were to fall. Such points of flexure across the saddle tree make it no better in terms of protection against damage to the horse than existing traditional trees which have a limited extension along the horse's back.

The saddle trees discussed above are not directed to avoiding and/or remedying damage to horse's backs, this being clear from the materials used in their construction and the compensations made to those materials in terms of reinforcing and flexing means.

In order to attempt to counter the problems of pressure points, existing saddles such as the above employ a layer of padding that resides between the tree and the horse's back. The padding has to date comprised a stuffing material consisting of man made materials such as nylon or other forms of man made flock. Whilst such padding initially helps to alleviate the problem of pressure points, the nature of the padding material is such that it readily groups together and breaks down thereby forming lumpy areas which merely exacerbate the pressure point problem.

So as to try to alleviate these problems, further padding, for example in the form of jelly pads, is often packed between the saddle and the horse's back. Such measures provide only some relief, impair the rider's position and do not seek to address the root of the problem, only its symptoms.

It is therefore an object of the invention to provide an arrangement which seeks to alleviate the problems associated with existing saddles.

According to a first aspect of the present invention there is provided a saddle tree for incorporation in a therapeutic saddle, the saddle tree comprising:-

a substantially elongate and imperforate member configured to the shape of a horse's back, wherein the saddle tree extends substantially the entire longitudinal length of the saddle so that in use it presents a smooth and continuous surface towards the horse's back from the withers to the hind quarters, and wherein the saddle tree is a one-piece integral plastics moulding.

In this manner, the tendency of the saddle to bend or buckle at a central point is negated so that the pressure points associated with conventional saddle trees are avoided. Moreover, as the saddle tree is a one-piece moulding, the underside thereof can be made very smooth to minimise the problem of pressure points being formed.

The saddle tree is formed so that it can flex to accommodate movement of the horse during usage. Talc may be used as a filler and an elastomer may be used as an impact modifier. Reinforcing materials such as glass fibre or carbon fibre may further be used for the tree. Such materials afford the plastics material the desired strength and flexibility characteristics.

Conveniently, the saddle tree is moulded by injection moulding techniques, although any alternative suitable method may be employed. Injection moulding provides high volume efficient manufacture. Preferably, the saddle tree has integrally moulded mountings for stirrups or the like.

Preferably, the saddle tree is formed of substantially 65% polypropylene, substantially 5% impact modifier, substantially 20% filler and substantially 10 % reinforcer.

In preferred embodiments, the tree is provided with padding

comprising a first layer of plastics material such as plastizone, a second layer of resilient material such as neoprene and a third layer of a latex. Conveniently, the layers are arranged in sequence with the first layer adjacent the saddle tree and the third layer adjacent the horse in use. The combination of these layers has been found to provide an arrangement that reduces the development of pressure points and also assists to avoid lumps appearing in the padding over prolonged usage of the saddle. Thus the saddle has an increased life span.

Preferably, the saddle tree is incorporated in a saddle. The saddle is preferably an exercise saddle.

According to a second aspect of the present invention there is provided a method of manufacturing a saddle tree as described above, the method comprising the steps of:-

a) providing a plastics mixture, comprising in the main part polypropylene; and

b) injection moulding the mixture in a single operation to manufacture the saddle tree.

Preferably, the mixture comprises substantially 65 % polypropylene, substantially 5% impact modifier, substantially 20% filler and substantially 10 % reinforcer.

According to a third aspect of the present invention there is provided padding for cushioning a saddle tree of a saddle, the padding comprising:-

a first layer of plastizone, a second layer of neoprene and a third layer of latex.

Conveniently, the layers are arranged in sequence with the first layer adjacent the saddle tree and the third layer adjacent the horse in use.

In preferred embodiments, the padding extends along a

longitudinal axis of the saddle tree and is configured to diverge outwardly from a rear end of the tree towards a front end of the tree. Conveniently, the padding diverges outwardly substantially in stepped sections. In this way, the saddle provides optimum cushioning with respect to the pressures exerted on the horse. Moreover, the padding extends to cover an area of muscle wastage adjacent the withers, to provide additional cushioning in this area. This alleviates pi ing of the withers which can otherwise detrimentally affect the performance of the horse.

Consequently, a balanced support is provided for the rider and efficient cushioning is afforded to the horse. Hence, the horse is less likely to suffer from back problems. Indeed, the improved saddle can be used to assist in the recovery of horses that have experienced back problems. Additionally, the rider is more optimally positioned on the horse.

An example of the present invention will now be described with reference to the accompanying drawings, of which:-

Figure 1 shows a perspective view of a conventional known saddle tree commonly used in race exercise saddles;

Figure 2 shows a perspective view of a saddle tree of the present invention;

Figure 3 shows a perspective view of a saddle incorporating a saddle tree of the present invention; and

Figure 4 shows in perspective from below a partly cut away view of the saddle of Figure 3.

Figure 2 shows a saddle tree 5 of the present invention. The saddle tree 5 is suitable for incorporation in a saddle 6 as shown in Figures 3 and 4 and comprises a substantially one-piece elongate member configured to the shape of a horse's

back (shown in phantom lines). The saddle tree extends substantially the entire longitudinal length of the lower part of the saddle so that in use it covers substantially an upper part of the horse's back from the withers 7 towards the hind quarters or loins 8. By extending in this manner, the tendency of the saddle to bend or buckle at a central point 9 (where the arms 2 of a conventional saddle tree would end) is negated so that the pressure points associated with conventional saddle trees are avoided.

The saddle tree is a one-piece plastics injection moulding and is as such highly suitable for efficient high volume manufacture.

As a one-piece component, the underside of the tree can be readily made continuous and smooth since for example rivet pins or other connection means are not utilised. Thus, the problem of pressure points being formed is minimised.

The plastics material used has to be relatively rigid and strong to ensure stability of the saddle and to enable a secure fitting on a horse. A degree of flexibility is however also needed to accommodate movement of the horse during usage of the saddle. In this connection, the double arcuate shape of tree assists resilience and flexibility along the longitudinal and transverse directions of the tree. The shape of the saddle tree and its constituent material allow it to be made relatively thin (4-22mm) and of substantially regular thickness throughout. This assists to keep the weight of the tree down and reduce the quantity of materials used. The constant nature of the thickness of the tree moreover has advantages in reducing the likelihood of deformities during moulding.

The arcuate shape in the transverse direction of the tree further assists to securely and comfortably position the saddle on the horse in use. Also sides 15 of the tree are

afforded a degree of resilience whereby the saddle can be seated comfortably on different sizes of horse and also to accommodate a degree of movement of a horse wearing the saddle.

The plastics material used for the tree is a resilient plastics polymer material and in particular, the material used includes a polypropylene copolymer as a base material. Polyethylene may be additionally included. The material preferably includes an impact modifier such as a synthetic rubber compound and an inorganic filler such as calcium carbonate/talc. A glass fibre or carbon fibre reinforcer may also be also be used to enhance the strength of the tree. The tree may be coloured as required using suitable colouring agents such as carbon black.

The approximate percentages of the above constituents is in a preferred example:

polypropylene - 65%
impact modifier - 5%
filler - 20%
reinforcer - 10%.

Such materials afford the desired strength and flexibility characteristics. However, it will be appreciated that other suitable materials may be used where appropriate.

As shown, the saddle tree can have integrally moulded mountings 10 for stirrups or other components.

As illustrated in the partly cut away Figure 4, the saddle has a multi-layered padding 11 that covers at least the area of the tree. The padding comprises a first layer 12 of plastizone, a second layer 13 of a memory resilient material such as neoprene and a third layer 14 of latex arranged in sequence with the first layer adjacent the saddle tree and the third layer adjacent the horse in use. The combination of these layers has been found to provide an arrangement that

reduces the development of pressure points and also assists to avoid lumps appearing in the padding over prolonged usage of the saddle. Thus the saddle has an increased life span. Clearly, alternative suitable materials having similar characteristics to those of the padding layers may be used where appropriate.

The padding 11 extends along a longitudinal axis of the saddle tree and is configured to diverge outwardly from a rear end of the tree to a front end of the tree. As shown, the padding diverges outwardly substantially in stepped sections 16. In this way, the saddle provides optimum cushioning with respect to the pressures exerted on the horse. Consequently, a balanced support is provided for the rider and efficient cushioning is afforded to the horse. Hence, the horse is less likely to suffer from back problems and the rider is optimally positioned on the horse.

The padding extends over a large proportion of the underside of the front of the saddle so as to afford suitable protection for the horse in the vulnerable areas where pressure points are more likely to subsist.

As shown in Figure 3 the saddle has enlarged saddle flaps 17. These serve to afford additional protection to the horse and to enhance the riding position of a rider. In particular, the increased forward projection of the saddle allows short jockeys, for example exercising for flat racing, to adopt a good riding position whilst also protecting the horse from abrasions from the jockey's knees. For steeple chase and point to point exercising, with taller and heavier jockeys, the fuller and deeper extent of the saddle affords an enhanced riding position whilst protecting the horse from the jockey's legs. Thus the saddle has a multi purpose capability. The increased coverage and thus protection of the saddle moreover alleviates problems that can be caused by pinching of the surcingle or girth that secures the saddle in place on the

horse.

In this respect the surcingle comes down within the saddle flap (through the slit shown in Figure 3) and will thereby not pinch the horses side as can happen with current racing horse saddles.

An example of a saddle tree of the present invention may be manufactured as follows.

Firstly suitable quantities of polypropylene, impact modifier and filler are mixed together to form the material which is to form the saddle tree. A reinforcer may additionally be introduced into the mixture.

In this connection, the inventors have found that a mixture of substantially 65 % polypropylene, substantially 5% impact modifier, substantially 20% filler and substantially 10 % reinforcer is preferred.

The preferred filler is an inorganic talc (calcium carbonate) and the preferred impact modifier is a synthetic rubber compound. The reinforcer may be of a glass fibre nature.

The mixture is then subjected to injection moulding with suitable moulds so as to form the shape of the saddle tree. The injected tree is then removed from the moulds and finished by sanding, cleaning etc.

It will be understood that the embodiment illustrated shows an application of the invention in one form only for the purposes of illustration. In practice, the invention may be applied to many different configurations, the detailed embodiments being straightforward for those skilled in the art to implement.

Claims:

1. A saddle tree for incorporation in a therapeutic saddle, the saddle tree comprising:-
a substantially elongate and imperforate member configured to the shape of a horse's back, wherein the saddle tree extends substantially the entire longitudinal length of the saddle so that in use it presents a smooth and continuous surface towards the horse's back from the withers to the hind quarters, and wherein the saddle tree is a one-piece integral plastics moulding.

2. A saddle tree according to claim 1, the major constituent of which is polypropylene.

3. A saddle tree according to claim 1 or 2, wherein the tree is moulded by injection moulding techniques.

4. A saddle tree according to any one of claims 1 to 3, wherein the saddle tree has integrally moulded mountings for stirrups or the like.

5. A saddle tree according to any preceding claim, wherein the tree is provided with padding comprising a first layer of plastizone, a second layer of a memory resilient material such as neoprene and a third layer of a latex.

6. A saddle tree according to claim 5, wherein the layers are arranged in sequence with the first layer adjacent the saddle tree and the third layer adjacent the horse in use.

7. A saddle tree according to any preceding claim formed of substantially 65 % polypropylene, substantially 5% impact modifier, substantially 20% filler and substantially 10 % reinforcer.

8. A method of manufacturing a saddle tree according to any

preceding claim, the method comprising the steps of:-
a) providing a plastics mixture comprising in the main part polypropylene; and

b) injection moulding the mixture in a single operation to manufacture the saddle tree.

9. A method according to claim 8, wherein the mixture comprises substantially 65 % polypropylene, substantially 5% impact modifier, substantially 20% filler and substantially 10 % reinforcer.

10. A saddle incorporating a saddle tree according to any one of claims 1 to 7 or manufactured according to claim 8 or 9.

11. A saddle according to claim 10, wherein the saddle is for exercising purposes.

12. A padding for cushioning a saddle tree of a saddle, the padding comprising:-
a first layer of plastizone, a second layer of resilient material such as neoprene and a third layer of a latex.

13. A padding according to claim 12, wherein the layers are arranged in sequence with the first layer adjacent the saddle tree and the third layer adjacent the horse in use.

14. A padding according to claim 12 or 13, wherein the padding extends along a longitudinal axis of the saddle tree and is configured to diverge outwardly from a rear end of the tree to a front end of the tree.

15. A padding according to claim 14, wherein the padding diverges outwardly substantially in stepped sections.

16. A saddle tree substantially as hereinbefore described with reference to the accompanying drawings.

17. A padding for cushioning a saddle tree of a saddle substantially as hereinbefore described with reference to the accompanying drawings.

18. A saddle substantially as hereinbefore described with reference to the accompanying drawings.

19. A method substantially as hereinbefore described with reference to the accompanying drawings.

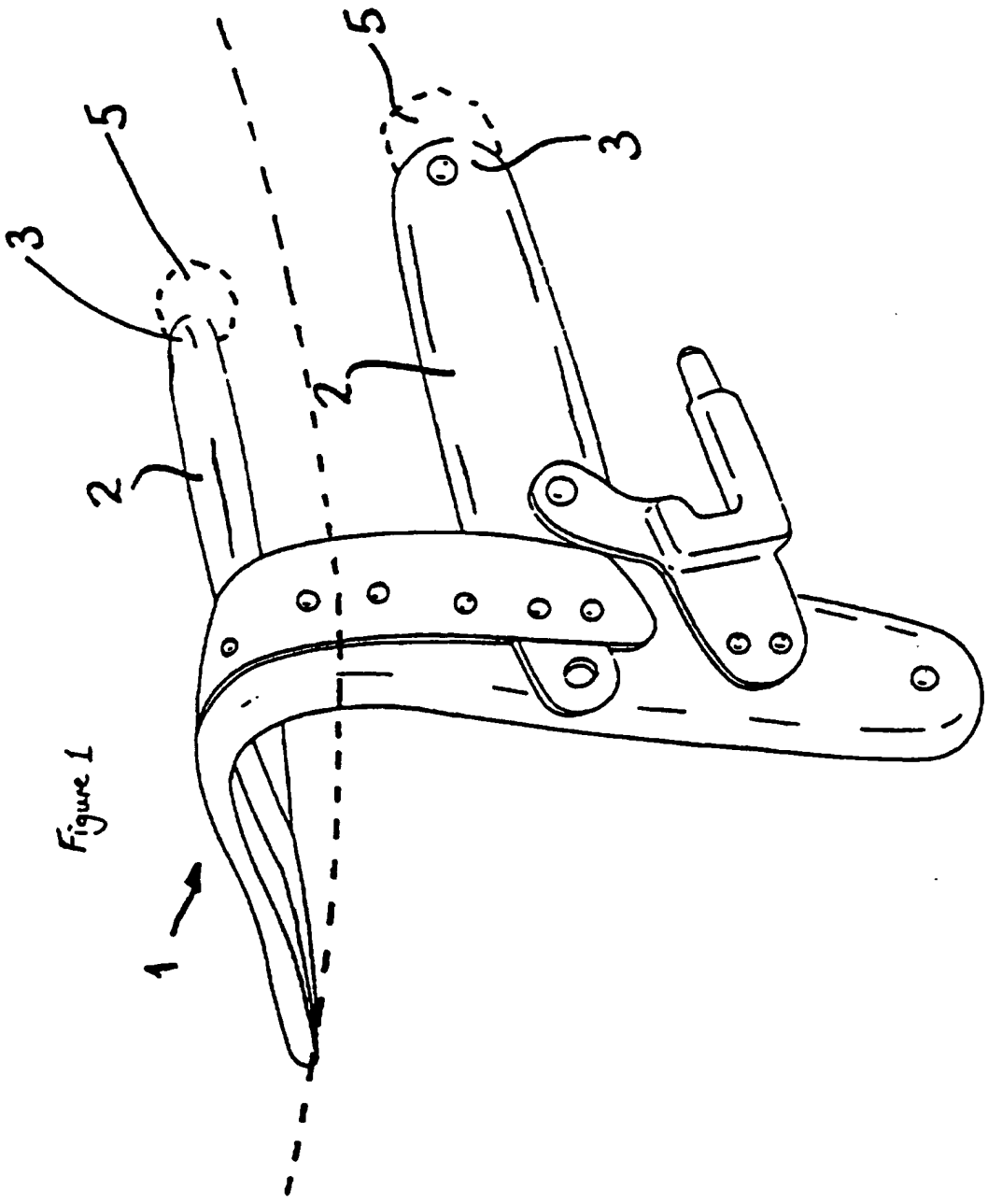

Figure 1

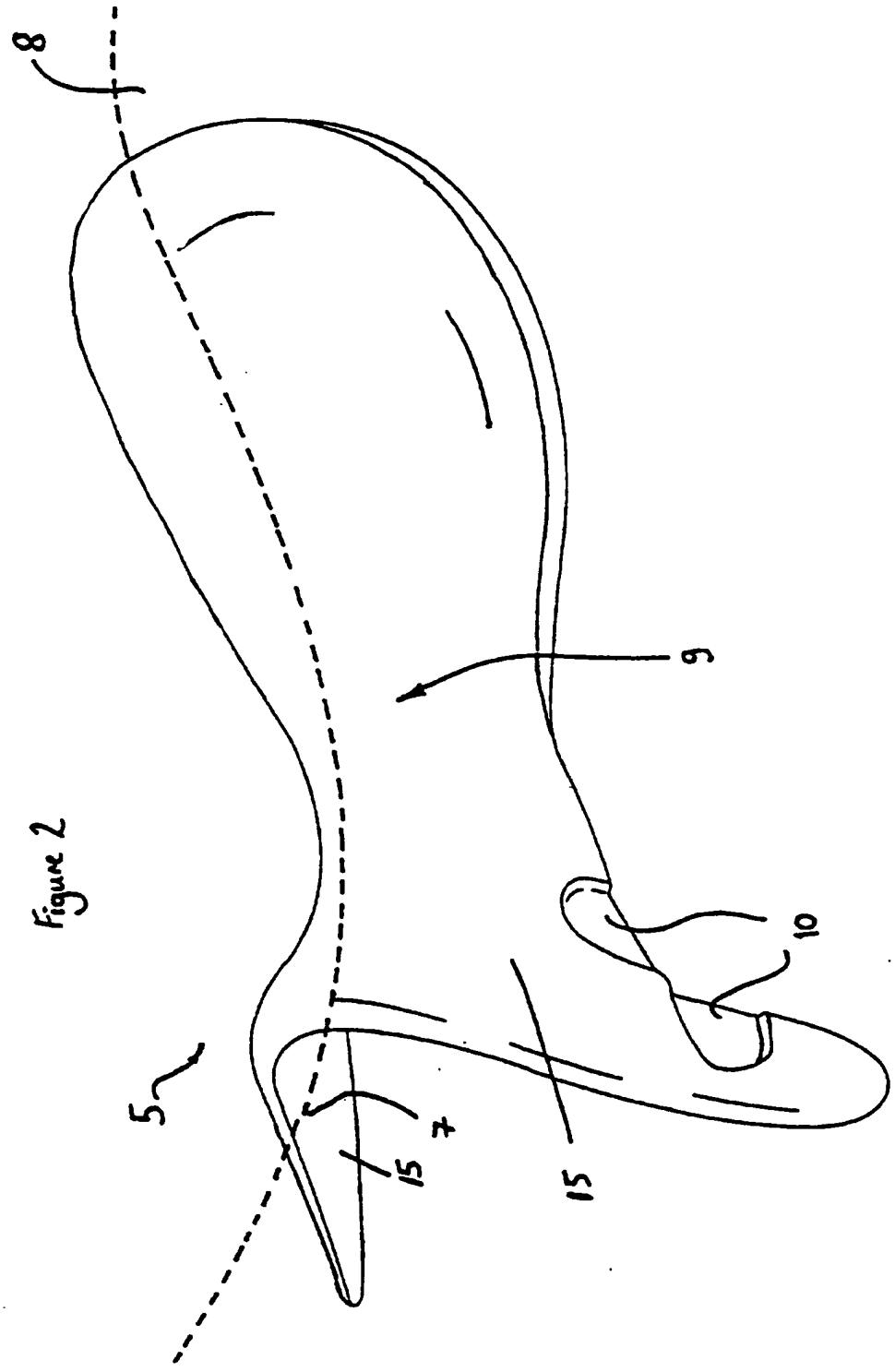

Figure 2

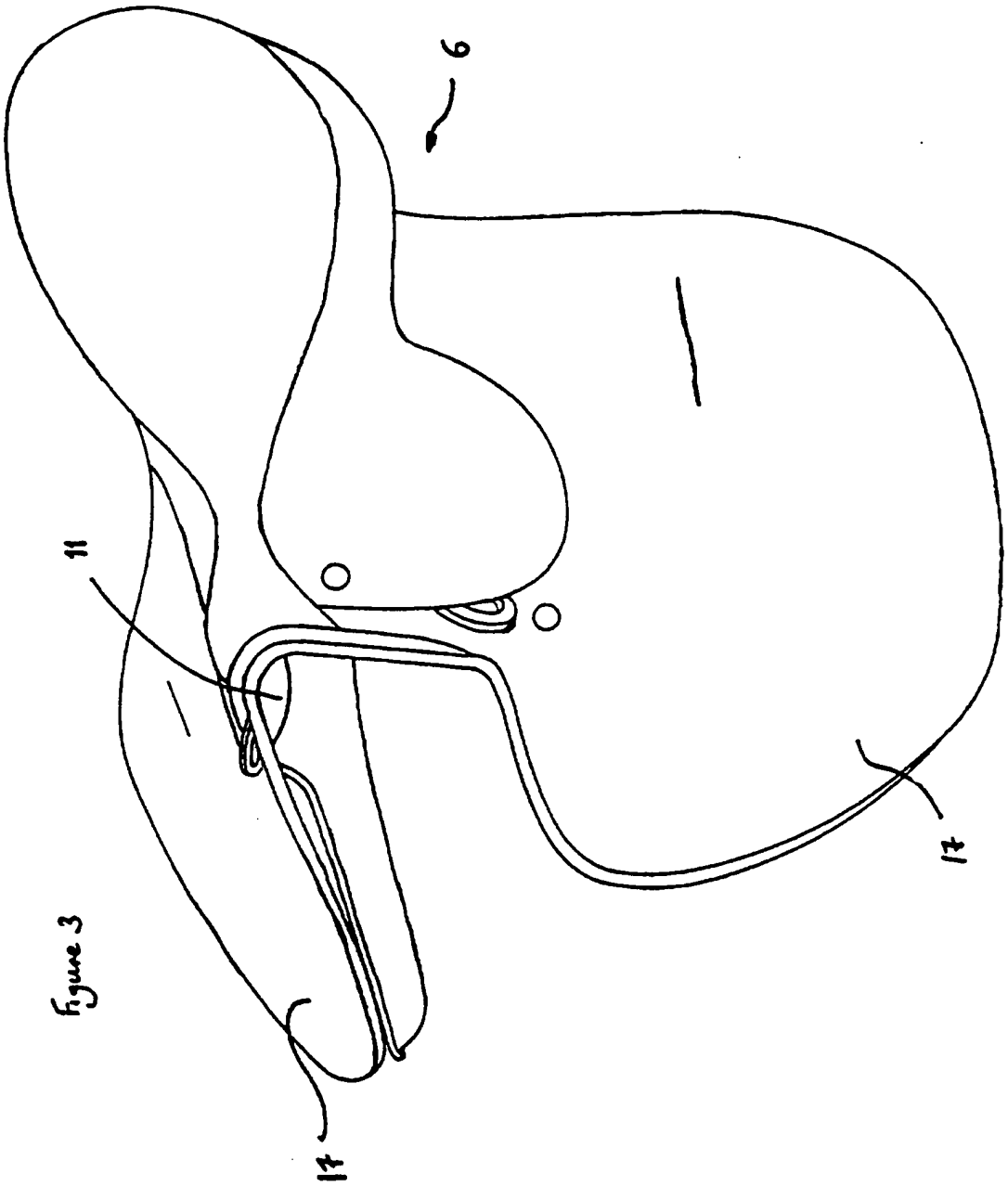

Figure 3

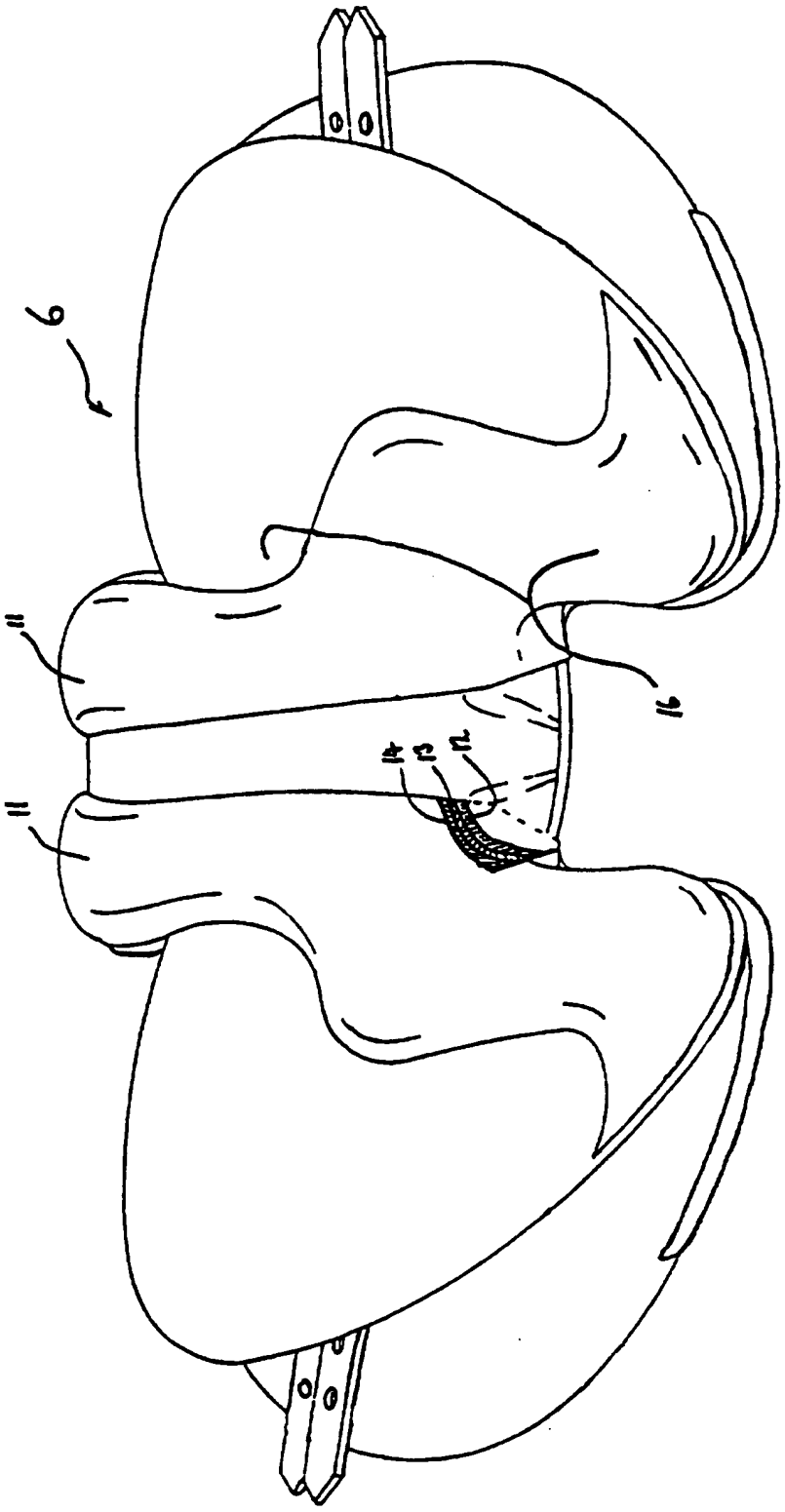

Figure 4